# For entrants in AY 2022

Appended Form 1

Specifications for Major Program

Name of School (Program)〔School of Engineering Cluster 2(Electrical, Electronic and Systems Engineering)〕

| | |
|---|---|
| Program name (Japanese) | 電子システムプログラム |
| (English) | Program of Electronic Devices and Systems |

1.Academic Degree to be Acquired：Bachelor's degree in engineering

2. Overview

In the fields of electricity, electronics, systems, information, and in other related fields, technological innovation has been advancing rapidly. We are now in a situation where innovative technology, ideas, and theories are being produced not only by deepening expert knowledge in a specific area, but by combining expert knowledge from multiple fields. As the impact of such technology on society is getting greater, it is always necessary to keep in mind the relationship between humankind, society, and nature.

On the basis of these social trends, Cluster 2 in the School of Engineering (electricity, electronics, systems, and information) has prepared the following programs with the aim of developing professionals who have a wide range of perspectives and insights, a sense of responsibility, and an ethical outlook, as well as specialized technological, problem-analyzing, and problem-solving abilities.

・The Program of Electronic Devices and Systems

・The Program of Electrical Systems and Information Engineering

Except for in exceptional circumstances, students who are enrolled in Cluster 2 in the School of Engineering (Electrical, Electronic and Systems Engineering) can choose this program from the above two options at the start of the second year, after going through liberal arts education and specialized education for one year after enrollment.

In the Program of Electronic Devices and Systems, students study electronic engineering centering on semiconductor devices such as integrated circuits.

Semiconductor device technology is one of the central technologies that supports modern society, in which computerization and informatization have been advancing. Today we use a number of devices and types of equipment in daily life and at work, such as audio and video equipment (TVs, video players, etc.) information processing and communication equipment (computers, the internet, mobile phones, etc.), transportation equipment (automobiles), electric home appliances (cooking devices, etc.), medical equipment, manufacturing equipment used in factories, etc., most of which is capable of complicated processing through simple operations using semiconductor devices. In medical and nursing care equipment, and in robots working at disaster sites, which are expected to become increasingly important in the years to come, operability that can achieve complex movement is more necessary than ever. Therefore, the ability to detect the situation using high performance and high functioning sensors, together with complex information processing using integrated circuits, is indispensable. Furthermore, the realization of judgment processing using artificial intelligence is eagerly awaited.

Meanwhile, considering the energy issues and global environmental problems that are expected to become serious in the future, electronic engineering technology centering on semiconductor devices has a major role to play in resolving many challenges. In order to reduce wasteful energy consumption by the efficient operation of various equipment, the utilization of semiconductor devices, not least solar cells, which are semiconductor devices that generate energy, is absolutely necessary.

Needless to say, new technology to reduce energy consumption by semiconductor devices themselves is also necessary.

To respond to such needs, it is necessary to refine current semiconductor technology through the introduction of new materials and new operating principles, and to develop technology that incorporates other fields. In order to develop professionals who have systematic knowledge and the ability to develop innovative technology, and who

the following knowledge and abilities so that students are able to achieve goals A to E listed above.

In the curriculum described above, teaching and learning will be implemented by utilizing active learning and online classes, depending on the delivery methods of the program, such as lectures and seminars.

In addition to strict grading using the standards clearly outlined in the syllabus, learning outcomes are evaluated based on the degree to which the goals set by the educational program are achieved.

〇Knowledge/Understanding

・Cultivation of the understanding of society-technology relations and the ethical outlook necessary for an engineer ( Goal A ). This is obtained through mastery of liberal arts education subjects such as “Introduction to University Education”, and “Information Subjects”, and basic specialized subjects such as “Introduction to Energy and Information Systems” to be offered in the first year.

・Basic knowledge of mathematics, such as differential and integral calculus, and linear algebra, required by scientists and engineers ( Goal B ). This is obtained through mastery of such basic subjects as “Calculus” to be offered in the first year.

・ Basic knowledge of physical theory and experimental methods required by scientists and engineers ( Goal B ). This is obtained through mastery of basic subjects such as “General Mechanics”, “Experimental Methods and Laboratory Work in Physics” to be offered in the first year.

・General understanding and acquisition of knowledge about technologies in the field of electronic systems, and acquisition of the basic knowledge common to this field ( Goal B ). This is obtained through mastery of “Introduction to Energy and Information Systems” and “Electric Circuit Theory I”

agenda

established for each student. The following are more concrete goals:

1. The acquisition of the ability to make a research plan based on the research agenda and execute the research in accordance with the plan
2. The acquisition of the ability to collect materials related to the research agenda, demonstrate a deep understanding of the research agenda, and identify problems
3. The acquisition of the ability to analyze the problems in the research agenda and reach solutions in accordance with the requirements of society
4. The acquisition of the ability to read, write, converse, and retrieve information in the English language necessary for conducting research
5. The acquisition of the ability to organize research results and write in coherent sentences the significance and validity of the obtained outcomes
6. The acquisition of the ability to present the research outcomes and discuss them verbally in an easy-to-understand manner

○ When and how it is assigned

The requirements for embarking on a graduation thesis are as described in student handbook.

Students in the fourth year or over, who satisfy the requirements for embarking on a graduation thesis, are to be

assigned as requested. How adjustments are made in relation to assignment is explained to the applicable students at a briefing held in advance. A briefing session about research topics or an open laboratory is held around the time from February to April for students who are to be assigned to the research laboratory and to the program.

# Cluster 2　Electrical, Electronic and Systems Engineering

Required subject (period of registration specified)
○ Compulsory elective subject (any of these subjects shall be registered)
Free elective subject (any of these subjects shall be registered)

| Subject Type | Required No. of credits | Class subjects, etc. | No. of credits | Type of course registration | Year in which the subject is taught (Note 8.1 Note 8.4) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spring | | | | | | | | Fall | | | | | | |
| | | | | | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T |
| Peace science curse | 2 | | 2 | Compulsory elective | | ○ | | | | | | | | | | | | | |
| Area Courses | 2 | Introduction to University Education | 2 | Required | | | | | | | | | | | | | | | |
| | 2 | Introductory Seminar for First-Year Students | 2 | Required | | | | | | | | | | | | | | | |
| | 4 | Courses in Arts and Humanities/Social Sciences | 2 | Compulsory elective | ○ | | ○ | | | | | | | | | | | | |
| | 4 | Courses in Natural Sciences | 2 | | | ○ | | ○ | | | | | | | | | | | |
| Communication | | Basic English UsageI | 1 | | | | | | | | | | | | | | | | |
| | | Basic English UsageII | 1 | | | | | | | | | | | | | | | | |
| | | CommunicationI | 1 | | | | | | | | | | | | | | | | |
| | | Communication I | 1 | | | | | | | | | | | | | | | | |
| | | Communication II | 1 | | | | | | | | | | | | | | | | |
| | | Communication II | 1 | | | | | | | | | | | | | | | | |
| | | 1 subjects from Basic language I | 1 | | | | | | | | | | | | | | | | |
| | | 1 subjects from Basic language II | 1 | | | ○ | | | | | | | | | | | | | |
| | 2 | Introduction to Information and Data Sciencies | 2 | Required | | | | | | | | | | | | | | | |
| | 2 | | 1or2 | Compulsory elective | ○ | ○ | ○ | ○ | | | | | | | | | | | |
| | | CalculusI | 2 | | | | | | | | | | | | | | | | |
| | | CalculusII | 2 | | | | | | | | | | | | | | | | |
| | | Linear AlgebraI | 2 | | | | | | | | | | | | | | | | |
| | | Linear AlgebraII | 2 | | | | | | | | | | | | | | | | |
| | | Seminar in Basic Mathematics I | 1 | | | | | | | | | | | | | | | | |
| | | Seminar in Basic Mathematics II | 1 | | | | | | | | | | | | | | | | |
| | | General Mechanics I | 2 | | | | | | | | | | | | | | | | |
| | | General Mechanics II | 2 | | | | | | | | | | | | | | | | |
| | | Experimental Methods and Laboratory Work in Physics I Note 4 | 1 | | | | | | | | | | | | | | | | |
| | | Experimental Methods and Laboratory Work in Physics II Note 4 | 1 | | | | | | | | | | | | | | | | |
| | 6 | From all Subject Type Note 5 | | Free elective | | | | | | | | | | | | | | | |
| | 48 | | | | | | | | | | | | | | | | | | |

# Cluster 2 Basic Specialized Subjects

◎ Required subject
○Compulsory elective subje
△Free elective subject

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | | | | | | | | | | | | | | | | [illegible] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | [illegible] | | | | [illegible] | | | | [illegible] | | | | [illegible] | | | | |
| | | | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | [illegible] | | |
| | | | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | | | | | | | | | | |
| [illegible] | [illegible] | ○ | | | | | | [illegible] | | | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | [illegible] | | | | | | | | | | | |
| [illegible] | [illegible] | ○ | | | | | | | [illegible] | | | | | | | | | | | [illegible] |
| [illegible] | [illegible] | ○ | ○ | | | | | | | [illegible] | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | | | [illegible] | | | | | | | | |
| [illegible] | [illegible] | | ○ | | | | | | | | [illegible] | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | [illegible] | | | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | | | | | [illegible] | | | | | | |
| [illegible] | [illegible] | | | | | | [illegible] | | | | | | | | | | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | [illegible] | | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | [illegible] | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | | | [illegible] | | | | | | | | |
| [illegible] | [illegible] | | | | | | | [illegible] | [illegible] | | | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | [illegible] | [illegible] | | | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | | | [illegible] | [illegible] | | | | | | | |
| [illegible] | [illegible] | | | | | | | | | | | | | [illegible] | [illegible] | | | | | |

## Cluster 2 Specialized Subjects

### Program of Electronic Devices and Systems

◎ Required subject
○Compulsory elective subject
△Free elective subject

| [illegible] | [illegible] | [illegible] | [illegible] | | | | | | | | | | | | | | | | [illegible] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | |
| [illegible] | | ○ | | | | | | | | | | | | | | | | | |
| [illegible] | | △ | | | | | | | | | | | | | | | | | [illegible] |
| [illegible] | | △ | | | | | | | | | | | | | | | | | [illegible] |
| [illegible] | | △ | | | | | | | | | | | | | | | | | [illegible] |
| [illegible] | | △ | | | | | | | | | | | | | | | | | [illegible] |
| [illegible] | | △ | | | | | | | | | | | | | | | | | [illegible] |
| [illegible] | | △ | | | | | | | | | | | | | | | | | [illegible] |
| [illegible] | | ◎ | | | | | | | | | | | | | | | | | |

## Academic Achievements in Electronic Devices and Systems Program

### The Relationship between Evaluation Items and Evaluation Criteria

| Academic Achievements | | | Evaluation Criteria | | |
|---|---|---|---|---|---|
| Evaluation Items | | | Excellent | Very Good | Good |
| Knowledge/Understanding | (1) | The ethics and understanding about the relations between society and technology considered basically necessary for engineers. | Sufficiently understand relations between society and technology, and be able to behave with a sufficient sense of ethics. | Understand relations between society and technology at the standard level, and be able to behave with a standard sense of ethics. | Marginally understand relations between society and technology, and be able to behave with a minimum sense of ethics. |
| | (2) | Basic knowledge of mathematics such as calculus and linear algebra, which is required for scientists/engineers. | Acquire and be able to utilize sufficient basic knowledge of mathematics such as calculus and linear algebra. | Acquire and be able to utilize standard basic knowledge of mathematics such as calculus and linear algebra. | Acquire and be able to utilize minimum basic knowledge of mathematics such as calculus and linear algebra. |
| | (3) | Basic knowledge of theories and experimental methods of physics, which is required for scientists/engineers. | Acquire and be able to utilize sufficient basic knowledge of theories and experimental methods of physics. | Acquire and be able to utilize standard basic knowledge of theories and experimental methods of physics. | Acquire and be able to utilize minimum basic knowledge of theories and experimental methods of physics. |
| | (4) | Comprehensive understanding and knowledge of technologies in electronics engineering. Also, basic knowledge which is common in these fields. | Sufficiently acquire and be able to utilize general, common and basic knowledge of electronics engineering. | Acquire and be able to utilize general, common and basic knowledge of electronics engineering, at the standard level. | Marginally acquire and be able to utilize general, common and basic knowledge of electronics engineering. |
| Abilities/Skills | (1) | Mathematical methods required for professionals in electronics engineering. | Sufficiently acquire and be able to utilize mathematical methods which are required for professionals in electronics engineering. | Acquire and be able to utilize mathematical methods which are required for professionals in electronics engineering, at the standard level. | Marginally acquire and be able to utilize mathematical methods which are required for professionals in electronics engineering. |
| | (2) | Concepts, knowledge and methods which are the basis for studies related to electronic engineering. | Sufficiently acquire and be able to utilize concepts, knowledge and methods which are the basis for studies related to electronics engineering. | Aquire and be able to utilize concepts, knowledge and methods of electronics engineering, at the standard level. | Marginally acquire and be able to utilize concepts, knowledge and methods which are the basis for studies related to electronics engineering. |
| | (3) | Ability to apply basic concepts, knowledge, and methods of electronics engineering to concrete/technical problems. | Acquire and be able to utilize sufficient abilities to apply basic concepts, knowledge and methods of electronics engineering to concrete/technical problems. | Acquire and be able to utilize standard abilities to apply basic concepts, knowledge and methods of electronics engineering to concrete/technical problems. | Acquire and be able to utilize marginal abilities to apply basic concepts, knowledge and methods of electronics engineering to concrete/technical problems. |
| | (4) | Ability to solve practical issues and problems by conducting experiments, using numerical computation methods, and collecting relevant materials. | Acquire and be able to utilize sufficient abilities to solve practical issues and problems by conducting experiments, using mathematical methods, and collecting relevant materials. | Acquire and be able to utilize standard abilities to solve practical issues and problems by conducting experiments, using mathematical methods, and collecting relevant materials. | Acquire and be able to utilize marginal abilities to solve practical issues and problems by conducting experiments, using mathematical methods, and collecting relevant materials. |
| | (5) | Ability to solve pracitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods. | Acquire and be able to utilize sufficient abilities to solve pracitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods. | Acquire and be able to utilize standard abilities to solve pracitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods. | Acquire and be able to utilize marginal abilities to solve pracitical issues and problems by voluntarily making a plan, revising it, and utilizing basic and technical knowledge and methods. |
| Comprehensive Abilities | (1) | Creative thinking ability and logical thinking skills to analyze practical problems and tasks, and to lead to rational solutions satisfying social needs, as well as technical development skills to physically realize the solutions. | Sufficiently aqcuire and be able to utilize logical thinking skills to lead to rational solutions satisfying social needs and technical development skills to phisically realize the solutions. | Aqcuire and be able to utilize logical thinking skills to lead to rational solutions satisfying social needs and technical development skills to phisically realize the solutions, at the standard level. | Marginally aqcuire and be able to utilize logical thinking skills to lead to rational solutions satisfying social needs and technical development skills to phisically realize the solutions. |
| | (2) | Skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions. | Acquire and be able to utilize sufficient skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions. | Acquire and be able to utilize standard skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions. | Acquire and be able to utilize marginal skills to organize research results and to describe them logically including the significance and the effectiveness of the obtained outcomes as well as to make easy-to-understand oral presentations and discussions. |
| | (3) | Teamwork, leadership and communication skills in group works. | Sufficiently acquire and be able to utilize the teamwork, leadership and communication skills for presentations and discussions through solving issues in group works. | Acquire and be able to utilize the teamwork, leadership and communication skills for presentations and discussions through solving issues in group works, at the standard level. | Marginally acquire and be able to utilize the teamwork, leadership and communication skills for presentations and discussions through solving issues in group works. |
| | (4) | Ability to understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve. | Sufficiently acquire and utilize skills to fully understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve. | Acquire and utilize skills at the standard level to understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve. | Marginally acquire and utilize skills to minimally understand that various problems, which humanity, society, and individuals are facing, can be interpreted variously depending on social status, culture and so on, as well as to deal with those problems to solve. |
| | (5) | Ability of English conversation, reading and writing skills necessary for research accomplishment. | Sufficiently acquire and be able to utilize the ability of English conversation, reading and writing skills necessary for engineers. | Acquire and be able to utilize the ability of English conversation, reading and writing skills necessary for engineers, at the standard level. | Marginally acquire and be able to utilize the ability of English conversation, reading and writing skills necessary for engineers. |

### Placement of the Liberal Arts Education in the Major Program

Liberal Arts Education in this program assumes the role of establishing the academic foundation on which the specialized education for Cluster 2 in the School of Engineering is built. It fosters a willing, self-reliant attitude and cultivates scientific thinking based on data gathering ability, analytical ability, and critical thinking ability. It establishes an outlook that makes it possible to provide insight on the inner nature of things and their background from a broad perspective, and enhances linguistic ability to a level appropriate for living as a world citizen, and also strengthens interest in peace and the ability integrates a broad range of knowledge into a body of knowledge that will be truly useful in solving problems. It cultivates the ability to explore and promote cross-disciplinary and comprehensive research that goes beyond the established frameworks.

Relationships between the evaluation items and class subjects

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Weighted values of evaluation items in the subject | Weighted values of evaluation items | Weighted values of evaluation items in the subject | Weighted values of evaluation items | Weighted values of evaluation items in the subject | Weighted values of evaluation items | Weighted values of evaluation items in the subject | Weighted values of evaluation items | **Weighted values of evaluation items in the subject** | | | | | | | | | | | |

[illegible]

Sheet

# Curriculum Map of Electronic Devices and Systems

| Academic Achievement | 1st grade | | 2nd grade | | 3rd grade | | 4th grade | |
|---|---|---|---|---|---|---|---|---|
| Evaluation Items | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall |
| Knowledg/Understanding: The ethics and understanding about the relations between society and technology considered basically necessary for engineers. | <1T>Introduction to University Education<br>Introduction to Information and Data Sciencies | <1T>Introduction to Energy and Information Systems | | | | | | |
| Knowledg/Understanding: Basic knowledge of mathematics such as calculus and linear algebra, which is required for scientists/engineers. | CalculusI<br>Linear AlgebraI<br>Seminar in Basic Mathematics I<br>General Mechanics I | CalculusII<br>Linear AlgebraII<br>Seminar in Basic Mathematics II<br>General Mechanics II<br>Experimental Methods and Laboratory Work in Physics I | | | | | | |
| | | <1T>Introduction to Energy and Information Systems<br>Electric Circuit Theory I | | | | | | |
| | | Applied Mathematics I | Applied Mathematics II<br>Applied Mathematics III<br>Probability and Statistics | Synthesis of Applied Mathematics<br>Engineering Mathematics C | | | | |
| | | | Programming I<br>Electromagnetism I<br>Exercise of Electromagnetism I<br>Introduction to Physical Electronics<br>Introduction to Semiconductor Devices and Circuits<br><1T>Logic System Design<br>Circuit Theory II<br>Control Systems Engineering I | Programming II<br>Electromagnetism II<br>Exercise of Electromagnetism II<br>Quantum Mechanics<br>Solid State Physics<br>Electric Transient Phenomena<br>Electronic Circuits<br>Control Systems Engineering II<br><3T>Digital Circuit Design<br><3T>Algorithms and Data Structures | Thermodynamics and Statistical Mechanics<br>Solid State Physics<br>Signal Processing Engineering | Robotics | | |
| | | | Exercise of Electromagnetism I<br><1T>Logic System Design<br>Circuit Theory II<br>Control Systems Engineering I | Electromagnetism II<br>Exercise of Electromagnetism II<br>Electric Transient Phenomena<br>Electronic Circuits<br>Electric Energy Generation and Conversion<br>Control Systems Engineering II<br><3T>Digital Circuit Design<br><4T>Databases<br><3T>Algorithms and Data Structures | Electromagnetic Wave Propagation<br>Semiconductor Device Engineering<br>Electric and Electronic Measurements<br>CMOS Logic Circuit Design<br>Fundamentals of Power Systems<br>Signal Processing Engineering<br>Bioelectrical Engineering<br><1T>Mechanism how programs run on computers | Surface Science and Nanotechnology<br>Optoelectronic Semiconductor Devices<br>Electronic Material Engineering<br>Semiconductor Process Engineering<br>CMOS Integrated Design<br>Communication Engineering<br><4T>Computer Network<br><4T>Human Computer Interaction | | |
| | | | Basic Experiments in Electrical Engineering I<br>Programming I | Basic Experiments in Electrical Engineering II<br>Programming II | Experiments in Electrical Engineering (Electronics and System Engineering) I | Experiments in Electrical Engineering (Electronics and System Engineering) II | | |
| | | | | | | | Graduation Thesis | Graduation Thesis |
| | Introductory Seminar for First-Year Students | | | | | | Graduation Thesis | Graduation Thesis |
| | Introductory Seminar for First-Year Students | | | | | | Graduation Thesis | Graduation Thesis |
| | | | Basic Experiments in Electrical Engineering I | Basic Experiments in Electrical Engineering II | Experiments in Electrical Engineering (Electronics and System Engineering) I | Experiments in Electrical Engineering (Electronics and System Engineering) II | | |
| | <1T>Introduction to University Education<br>Peace Science Courses<br>Area Courses<br>Health and Sports Courses<br>Basic language I II<br>Basic English UsageI<br>CommunicationI<br>Communication I | Area Courses<br>Health and Sports Courses<br>Basic English UsageII<br>Communication II<br>Communication II | | | | Technical English | Graduation Thesis | Graduation Thesis |
| | | | | Ex | Liberal Arts Education | Basic Specialized Subjects | Specialized Subjects | Graduation Thesis |